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ARMY AVIATION TEST BOARD FORT RUCKER ALA
PRODUCT IMPROVEMENT TEST, UH-1C INPUT END OF THE MIXING LEVER A--ETC(U)
AUG 68

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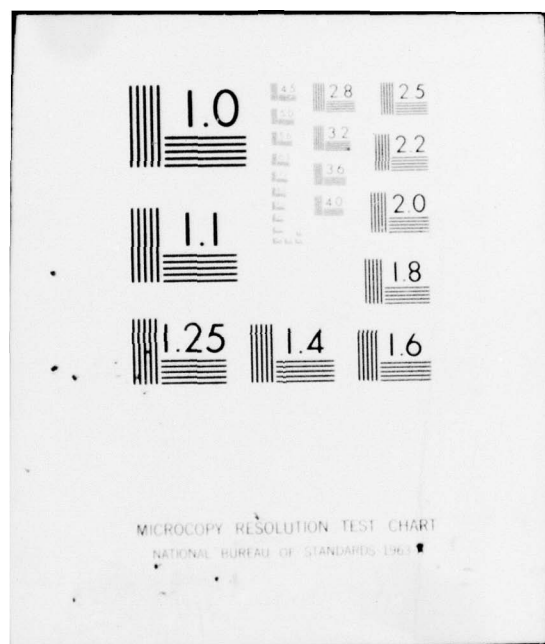
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DEPARTMENT OF THE ARMY
UNITED STATES ARMY AVIATION TEST BOARD
Fort Rucker, Alabama 36360

STEBG-TD

AUG 8 1968

SUBJECT: Letter Report, "Product Improvement Test, UH-1C
Input End of the Mixing Lever and the Output End
of the Scissors." USATECOM Project Number 4-7-
0108-07 ✓

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1. REFERENCES

a. Letter, AMSTE-BG, Headquarters, US Army Test and
Evaluation Command, 5 June 1967, subject: "Test Directive,
Product Improvement Test, UH-1C Components."

b. Letter, AMSAV-EAA, Headquarters, US Army Aviation
Materiel Command, 5 June 1967, subject: "Disposition of
UH-1C, S/N 65-9467, and UH-1C, S/N 65-9445, Components."

c. Letter, AMSAV-EGGA, Headquarters, US Army Aviation
Materiel Command, 8 June 1967, subject: "Request for Pro-
duct Improvement Test of UH-1C Critical Component Protec-
tion."

d. Letter, AMSTE-BG, Headquarters, US Army Test and
Evaluation Command, 14 June 1967, subject: "UH-1 Product
Improvement Test, USATECOM Project Number 4-7-0108-()."

2. BACKGROUND

The UH-1() has undergone various test programs since initial
procurement by the Army in an effort to improve the reliability
and durability of the helicopter and the safety of personnel. At
the 21 May 1967 UH-1() Product Improvement Program Conference

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at Bell Helicopter Company, the evaluation of certain improved Model 540 rotor components was proposed. Two of the components, the UH-1C scissors and mixing levers, were intended to last 1,100 flight hours. However, based on a review of Equipment Improvement Recommendations, they were being removed at an average time of 500 flight hours. This caused significant increases in maintenance man-hours expended, UH-1C downtime, and spares support demands. The US Army Aviation Materiel Command requested a product improvement test of improved scissors and mixing levers. This test was conducted by the ~~US Army Aviation Test Board~~ (USAAVNTBD) at the direction of the US Army Test and Evaluation Command.

3. DESCRIPTION OF MATERIEL

Two UH-1C scissors and two mixing levers (see Inclosure 1) were modified by the installation of redesigned Shafer bearings (part number 540-011-415-1). Although outwardly appearing the same as the old bearings, the improved bearings have a closer tolerance between the ball and the bearing outer race, and incorporate a special parting agent between the ball and the Teflon which results in a burnished effect on the Teflon.

4. TEST OBJECTIVE

To determine whether incorporation of improved Shafer bearings will increase the time between overhaul (TBO) of the UH-1C Helicopter mixing levers and scissors assembly to 1,100 hours.

5. SCOPE AND METHOD

The USAAVNTBD conducted this Category II product improvement test at Fort Rucker, Alabama, during the period 29 November 1967 through 19 June 1968. The mixing levers and scissors assembly, with redesigned bearings, were installed on UH-1C Helicopter, S/N 65-9445. During the test period, they were inspected in accordance with the aircraft organizational maintenance technical manual.

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6. SUMMARY OF RESULTS

Test items were removed because of wear beyond limits after
being installed for the following periods of time (flight hours):

| <u>Test Item</u> | <u>Red Blade</u> | <u>White Blade</u> | <u>Mean Time Between Failures</u> |
|-------------------------|----------------------|------------------------|---|
| Mixing Lever Bearings | 653.8 | 912.0 | 782.9 |
| Scissors Lever Bearings | 776.4 | 971.9 | 874.1 |

7. CONCLUSION

Incorporation of improved Shafer bearings will increase the TBO
of the UH-1C mixing lever and scissors, but will not increase the
TBO to 1,100 hours.

8. RECOMMENDATION

It is recommended that efforts be continued to improve the UH-1C
mixing levers and scissors bearings in order to increase the TBO of
these components to at least 1,100 hours.

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as

David M. Kyle
DAVID M. KYLE *for*
Colonel, Artillery
President

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